Primary fallopian tube cancer in term pregnancy: a case report

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Summary

Purpose: This work aimed to study the features of primary fallopian tube carcinoma during pregnancy and to improve the understanding of clinical gynecologists. *Methods:* The clinical features of a case of primary fallopian tube carcinoma during pregnancy were analyzed. *Results:* The final diagnosis was Stage IA fallopian tube cancer after cesarean delivery. *Conclusions:* It is helpful to detect CA-125 level and employ B-mode ultrasound imaging. Patients should undergo routine celiac examinations before gynecological and obstetric procedures (including cesarean section and abdominal hysterotomy) are performed.

Key words: Fallopian tube cancer; Pregnancy; Case report.

Introduction

Primary fallopian tube carcinoma is a rare female reproductive malignant tumor, which accounts for 0.1%-1.8% reported gynecological malignancies [1]. Since primary fallopian tube cancer has atypical symptoms, the diagnosis is difficult with a high misdiagnosis rate and thus poor treatment. A case of primary fallopian tube carcinoma during pregnancy is reported together with a review of the literature.

Case Report

A 35-year-old patient, gravida 1, para 0, at 38 and four weeks of gestation was admitted to the Shenzhen Nanshan Hospital on October 26, 2009 due to vaginal bleeding with abnormal hypogastralgia for four hours. Her last menstrual period was on January 28, 2009 and the expected date of childbirth was November 5, 2009.

She had a history of morning sickness (nausea and vomiting) for 40 days after amenorrhea, which was alleviated after four months of gestation. During the gestational period, she was neither exposed to drugs nor radioactive substances. She had undergone regular obstetric examinations; her blood glucose level was 8.97 mmol/l, determined by oral glucose (50 g) tolerance tests performed at 24+ of gestation. On September 25, 2009 the oral glucose tolerance test (OGTT) showed that blood glucose levels were 10.77 mmol/l, 11.35 mmol/l, and 8.13 mmol/l, respectively at one, two and three hours after oral medication. She had gestational diabetes mellitus. She had been managed with diet control without drug therapy until the time of admission.

Routine medical examinations were performed after admission. The following results were obtained: body temperature 36.5°C; pulse rate, 90 beats/min; respiratory frequency 20 cycles/min; and blood pressure 137/74 mmHg. The general condition of the patient was good with no obvious cardiopulmonary abnormality. Obstetric examinations showed that the fundal height was 36 cm, abdominal perimeter was 98 cm, and the estimated fetal weight was 3,400 g. The position of the fetus was left occipito-anterior (LOA), the head appeared first with partial engagement, and the fetal heart rate was 138 beats/min. Vaginal examination showed that the head appeared first, and the cervix was undialated. The fetal membranes were not ruptured, amniotic fluid outflow was not observed, and vaginal pH was negative; the cervical canal disappeared partially. External pelvimetry showed that the interspinous diameter was 24 cm, intercristal diameter 26 cm, external conjugate diameter 20 cm, and the biischial diameter was 9 cm. Auxiliary examinations showed negative results for human immunodeficiency virus (HIV), rapid plasma regain, and hepatitis B surface antigen. Therefore, at admission, the fetus was in the LOA position, and there was premature rupture of the fetal membranes.

On October 27, 2009 the patient underwent cesarean delivery under combined spinal-epidural anesthesia with a transverse incision of the lower uterine segment and left salpingectomy. The lower uterine segment was well developed and the amniotic fluid (800 ml) was clear. The patient delivered a baby boy weighing 3,750 g and the Apgar score was 10 at both 1 and 5 min. The placenta was completely stripped, and uterine examination indicated that the uterus was normal. The ampulla of the left fallopian tube was thickened with an allantoid-shaped mass 4 x 3 cm in size. The surface of the mass was smooth and intact without adhesions. The left ovary and the right adnexa were normal in appearance.

After the patient underwent left salpingectomy the surgical specimens were sent for pathological examination. The results of pathological examination performed after surgery (pathological report no. 200909535) showed well differentiated adenocarcinoma of the left fallopian tube without cancerous invasion to the serosa. Immunohistochemistry revealed that the tumor cells were progesterone receptor (PR)(++), estrogen receptor (ER)(–), $CerB_2$ (–), p53 (–), and (CEA)(–). The diagnosis was confirmed by the pathology report of Sun Yat-Sen University. Thus, the final diagnosis was Stage IA fallopian tube cancer. After the patient was discharged, she was admitted to Beida Shenzhen Hospital where she underwent total hysterectomy plus bilateral salpingo-oophorectomy, omentum majus resection, appendectomy and pelvic lymph node dissection. She received chemotherapy consisting of the combination of taxol plus carboplatin (TP regimen). The serum CA-125 value at the last follow-up was within normal range.

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Discussion

Primary fallopian tube cancer (PFTC) is a rare cancer of the female reproductive system, accounting for 0.1-1.8% of female genital tract malignancies. The morbidity rate due to PFTC in the USA from 1998 to 2003 was reported to be 0.41/100,0000 [1]. The peak onset age is 50-60 years, and PFTC occurs in two-thirds of patients after menopause. Reports show that morbidity due to PFTC tends to increase gradually, and increases markedly in patients in the middle and early stages of PFTC [2, 3]. The pathogenesis of PFTC remains unclear, but it may be associated with chronic salpingitis, infertility, tuberculous salpingitis, and endosalpingiosis. Annika, *et al*. [4] reported that parity plays a protective role against fallopian tube cancer (FTC) and that this protection was enhanced with increased parity. A cytogenetic study showed that p53, HER2/ne, and c-myc were overexpressed in patients with FTC. Further, the number of BRCA1 and BRCA2 mutations was greater in patients with PFTC than in normal subjects [1]. We have successfully treated a case of PFTC at term-pregnancy. To our knowledge, this is the first report on this condition.

The survival rate of patients in early stages of PFTC is greater than for those in late stages; therefore, early diagnosis of the condition is very important. The trio of abnormal vaginal discharge, hypogastralgia, and pelvic mass are the main signs of tubal carcinoma; however, these signs are seldom observed simultaneously. Imaging studies, especially vaginal B-mode ultrasound imaging facilitates the early diagnosis of PFTC. Following are the characteristics [5] of an acoustic image of FTC: 1) the annex region presents with an allantoid or irregular-shaped mass, and a cystic-solid-papillary appearance; 2) the ovarian morphology of the annex region is intact; 3) both the solid echo of the annex region and resistance index (RI) of the bloodstream in the papilla are low [5].

Monitoring serum CA-125 levels is essential for the detection of recurrence of PFTC. Continuous monitoring of serum CA-125 levels indicated that this value reached up to 145-535 U/ml, declined after the initial treatment, and increased in cases where PFTC relapsed. Therefore, serum CA-125 level is an important indicator in the diagnosis and monitoring of FTC. Some studies have also reported that increased serum CA-125 values occurred three to 11 months before the appearance of clinical symptoms, and thus early diagnosis was possible by detection of serum CA-125 [6]. Some studies have also reported [7] that the serum CA-125 level was not correlated with cancer grade in early stage FTC. However, nonspecific early diagnostic methods were used in the above-mentioned examination. In our case, pregnancy and premature rupture of fetal membranes obscured the symptoms of FTC; pregnant uterine hypertrophy covered the mass of the adnexa, and it was difficult to locate the cancer focus via imaging examination. Thus we conducted routine pelvic examinations on the patient to avoid reoperation for further investigation; the pelvic architecture was examined during cesarean delivery and frozen sections were prepared of the tissue samples collected from the adnexa during the same operation.

PFTC metastasizes via local diffusion and lymph node metastasis. It is mostly treated by surgery and chemotherapy and/or radiotherapy are administered as adjuvant therapies. The strategy for surgical treatment of PFTC includes cytoreductive surgery, including hysterectomy bilateral salpingo-oophorectomy, pelvic lymph node dissection, omentum majus resection, and appendectomy. Thus, the approach involves resection of all primary and metastatic carcinomas as far as possible, such that the residual cancer focus is reduced to less than 1 cm. A recent study [8] showed that 33% of the patients with Stage I/II FTC developed paraaortic or pelvic lymph node metastasis. Therefore, our patient underwent total hysterectomy plus bilateral salpingo-oophorectomy, omentum majus resection, appendectomy and pelvic lymph node dissection.

Chemotherapy is the major postoperative adjuvant therapy. A study by the Gynecologic Oncology Group (GOG) showed that combined chemotherapy with taxol plus carboplatin (TP regimen) for 60 months reduced the risk of progression by 28% and mortality by 34%. Moreover, follow-up studies for 6.5 years indicated that the TP regimen has superior long-term efficacy as compared to the CP regimen (cisplatin plus cyclophosphamide) [9]. These findings support the TP regimen as the preferred chemotherapy for PFTC. Our patient also underwent chemotherapy with the TP regimen. Findings reported by a previous study [10] showed that pelvic radiotherapy did not improve survival rate; its efficacy to treat the entire abdomen has not been determined, and extraabdominal metastasis recurred and was commonly complicated by severe gastrointestinal complications. Thus radiotherapy is not the preferred postoperative adjuvant therapy but should be used for palliative care in relapse patients.

On the basis of the results from the above-mentioned case report, we recommend that PFTC should be suspected in pregnant women presenting with abnormal vaginal discharge and metrorrhagia, women in the puerperium (especially eutocia) who present with a pelvic mass detected by B-mode ultrasound imaging, blood vessels (RI < 0.5) in the mass detected by color Doppler ultrasonograpy, and increased levels of serum CA-125. These women should undergo surgery and other treatments as early as possible. Patients should also undergo routine celiac examinations before gynecological and obstetric operations (including cesarean section and abdominal hysterotomy) are performed. If the fallopian tubes are observed to be thickened and hardened during the operation, FTC should be suspected after excluding inflammation of the fallopian tubes and salpingocyesis. Further, tissue samples should be obtained and frozen sections prepared for histological examination to avoid misdiagnosis. After the diagnosis is confirmed, patients should undergo immediate surgery and adjuvant chemotherapy, and be followed-up regularly.

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